9 and marine supplement SA of UL 489 (incorporated by reference, see 46 CFR 110.10–1) or part 2 of IEC 60947–2 (incorporated by reference; see §110.10–1), except as noted in paragraph (e) of this section.

(c) Each circuitbreaker, other than a molded-case one, that is for use in any of the following systems must meet the following requirements:

(1) An alternating-current system having a nominal voltage of 600 volts or less (1,000 volts for such a system with circuitbreakers manufactured to the standards of the IEC) must meet:

(i) IEEE C37.13 (incorporated by reference; see 46 CFR 110.10–1);

(ii) ANSI/IEEE C37.27 (incorporated by reference; see 46 CFR 110.10–1); or

(iii) IEC 60947–2.

(2) A direct-current system of 3,000 volts or less must meet IEEE C37.14 (incorporated by reference; see 46 CFR 110.10–1) or IEC 60947–2.

(3) An alternating-current system having a nominal voltage greater than 600 volts (or greater than 1,000 volts for IEC standard circuitbreakers) must meet:

(i) IEEE C37.04, IEEE C37.010, and ANSI/IEEE C37.12 (all three standards incorporated by reference; see 46 CFR 110.10–1); or

(ii) IEC 62271–100 (incorporated by reference; see 46 CFR 110.10–1).

(d) A circuit breaker must not:

(1) Be dependent upon mechanical cooling to operate within its rating; or

(2) Have a long-time-delay trip element set above the continuous current rating of the trip element or of the circuit breaker frame.

(e) Each circuit breaker located in an engineroom, boilerroom, or machinery space must be calibrated for a 50 degree C ambient temperature. If the circuit breaker is located in an environmentally controlled machinery control room where provisions are made for ensuring an ambient temperature of 40 degree C or less, a circuit breaker must have at least the standard 40 degrees C ambient temperature calibration.

[CGD 74–125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 94–108, 61 FR 28279, June 4, 1996; 61 FR 33045, June 26, 1996; 62 FR 23908, May 1, 1997; USCG–2003–16630, 73 FR 65197, Oct. 31, 2008]

§ 111.54–3 Remote control.

Remotely controlled circuit breakers must have local manual means of operation.

[CGD 81–030, 53 FR 17847, May 18, 1988]

Subpart 111.55—Switches

§ 111.55–1 General.

(a) Each switch must meet Article 404 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10–1).

(b) Each switch that is in the weather must be in a watertight enclosure and be externally operable.

[CGD 74–125A, 47 FR 15236, Apr. 8, 1982, as amended by USCG–2003–16630, 73 FR 65198, Oct. 31, 2008]

§ 111.55–3 Circuit connections.

The load side of each circuit must be connected to the fuse end of a fused-switch or to the coil end of a circuit breaker, except a generator which is connected to either end of a circuit breaker.

Subpart 111.59—Busways

§ 111.59–1 General.

Each busway must meet Article 368 of NFPA NEC 2002 (incorporated by reference; see 46 CFR 110.10–1).

[USCG–2003–16630, 73 FR 65198, Oct. 31, 2008]

§ 111.59–3 No mechanical cooling.

A busway must not need mechanical cooling to operate within its rating.

[CGD 94–108, 61 FR 28280, June 4, 1996]

Subpart 111.60—Wiring Materials and Methods

§ 111.60–1 Construction and testing of cable.

(a) Each marine shipboard cable must meet all the requirements for construction and identification of either IEEE 1580, UL 1309, IEC 92–353, or NPFC MIL–C–24640A or NPFC MIL–C–24643A (all five standards incorporated by reference; see 46 CFR 110.10–1), including the respective flammability tests contained therein, and must be of a copper-stranded type.

(b) Each cable constructed to IEC 92–353 must meet the flammability requirements of Category A of IEC 60332–3–22 (incorporated by reference; see 46 CFR 110.10–1).

(c) Medium-voltage electric cable must meet the requirements of IEEE 1580 and UL 1072 (incorporated by reference; see 46 CFR 110.10–1), where applicable, for cables rated above 5,000 volts.

(d) Electrical cable that has a polyvinyl-chloride insulation with a nylon jacket (Type T/N) must meet either UL 1309, IEEE 1580, or section 8 of IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1).

(e) Electrical cable regardless of construction must meet, at a minimum, all of the performance and marking requirements of section 5.13 of IEEE 1580.

[USCG–2003–16630, 73 FR 65198, Oct. 31, 2008]

§ 111.60–2 Specialty cable for communication and RF applications.

Specialty cable such as certain coaxial cable that cannot pass the flammability test contained in IEEE 1580, test VW–1 of UL 1581, or Category A of IEC 60332–3–22 (all three standards incorporated by reference; see 46 CFR 110.10–1) because of unique properties of construction, must:

(a) Be installed physically separate from all other cable; and

(b) Have fire stops installed—

(1) At least every 7 meters (21.5 feet) vertically, up to a maximum of 2 deck heights;

(2) At least every 15 meters (46 feet) horizontally;

(3) At each penetration of an A or B Class boundary;

(4) At each location where the cable enters equipment; or

(5) In a cableway that has an A–60 fire rating.

[CGD 94–108, 61 FR 28280, June 4, 1996, as amended by USCG–2003–16630, 73 FR 65198, Oct. 31, 2008]

§ 111.60–3 Cable application.

(a)(1) Cable constructed according to IEEE 1580 must meet the provisions for cable application of section 24 of IEEE 45–2002 (both incorporated by reference; see 46 CFR 110.10–1).

(2) Cable constructed according to IEC 92–353 or UL 1309 (both incorporated by reference; see 46 CFR 110.10–1) must meet section 24 of IEEE 45–2002, except 24.6.1, 24.6.7, and 24.8.

(3) Cable constructed according to IEC 92–353 must be applied in accordance with IEC 60092–352 (incorporated by reference; see 46 CFR 110.10–1), Table 1, for ampacity values.

(b)(1) Cable constructed according to IEEE 1580 must be applied in accordance with Table 25, Note 6, of IEEE 45–2002.

(2) Cable constructed according to IEC 92–353 must be derated according to IEC 60092–352, clause 8.

(3) Cable constructed according to NPFC MIL–C–24640A or NPFC MIL–C–24643A must be derated according to NAVSEA MIL–HDBK–299 (SH) (all three standards incorporated by reference; see 46 CFR 110.10–1).

(c) Cable for special applications defined in section 24 of IEEE 45–2002 must meet the provisions of that section.

[USCG–2003–16630, 73 FR 65198, Oct. 31, 2008]

§ 111.60–4 Minimum cable conductor size.

Each cable conductor must be #18 AWG (0.82 mm^2) or larger except—

(a) Each power and lighting cable conductor must be #14 AWG (2.10 mm^2) or larger; and

(b) Each thermocouple, pyrometer, or instrumentation cable conductor must be #22 AWG (0.33 mm^2) or larger.

[CGD 94–108, 61 FR 28280, June 4, 1996]

§ 111.60–5 Cable installation.

(a) Each cable installation must meet—

(1) Sections 25, except 25.11, of IEEE 45–2002 (incorporated by reference; see 46 CFR 110.10–1); or

(2) Cables manufactured to IEC 92–353 must be installed in accordance with IEC 60092–352 (both incorporated by reference; see 46 CFR 110.10–1), including clause 8.

(b) Each cable installation made in accordance with clause 8 of IEC 60092–352 must utilize the conductor ampacity values of Table I of IEC 60092–352.

(c) No cable may be located in any tank unless—